

***Balgoya* (Polygalaceae trib. Moutabeeae),
a new genus from New Caledonia**

Ph. MORAT & R. VAN DER MEIJDEN

Summary : A new monotypic genus is described from New Caledonia, belonging to the *Polygalaceae* (trib. *Moutabeeae*).

Résumé : Description d'un genre monospécifique nouveau en Nouvelle-Calédonie appartenant à la famille des *Polygalaceae* (trib. *Moutabeeae*).

Philippe Morat, Laboratoire de Phanérogamie, Muséum national d'Histoire naturelle, 16, rue Buffon, 75005 Paris, France.

Rudolf van der Meijden, Rijksherbarium, Rapenburg 70-74, Postbus 9514, 2300 RA Leiden, The Netherlands.

BALGOYA Morat & Meijden, *gen. nov.*

Frutex scandens. Bracteae et bracteolae caducae. Sepala 5, libera, caduca. Petala 5, libera, basaliter tubo staminali adnata. Stamina (6-)8, monadelphia ; filamenta tota connata. Ovarium 3-4-locularum, ovulum 1, subapicaliter insertum in quoque loculo. Fructus baccatus.

TYPE SPECIES : *Balgoya pacifica* Morat & Meijden.

Liana. Twigs without nodal glands. Leaves alternate, entire, rarely with a gland near the base, petiolate.

Inflorescences axillary, raceme-like, unbranched. Bracts and bracteoles caducous. Sepals 5, free, slightly unequal, eventually caducous. Petals 5, free, almost equal, basally adnate to the staminal tube. Stamens (6-)8, monadelphous, filaments connate over the total length, tube at first slightly split, then open at maturity along the dorsal side ; anthers free. Disc very inconspicuous, annular, glabrous. Ovary globose, 3-4-locular, each locule with 1 subapical ovule ; style terminal, straight ; stigma capitate.

Fruit a fleshy, more or less globular berry. Seeds flattened radially, completely enveloped by an aril ; testa hairy ; albumen copious, fatty.

Balgoya pacifica Morat & Meijden, *sp. nov.*

Ramunculi strigosi ad glabrescentes. Folia elliptica vel anguste raro late obovata, basi attenuata, apex rotundatus raro obtusus vel retusus. Flores pedicellati. Sepala utrinque strigosa. Petala utrinque lanata.

Androecium gynoecio brevius ; tubus staminalis extus pilosus, intus pilosus, raro glaber ; antherae glabrae. Ovarium apice pilosum ; stylus dense pilosus ; stigma glabrum.

Liana, robust, reaching 25-30 m in length, 11 cm in diam. at the base, extending to at least 20 m above the ground. Flowering twigs terete, 2.5-6 mm in diam., striate, strigose to glabrescent, often spiral-cirriform (cork-screw shaped). Leaves elliptic to narrowly, rarely broadly obovate, 5-15 × 1.5-5.5 cm (to 24 × 2 cm in juvenile forms), index 2.7-4.75, widest at or above the middle ; base attenuate ; apex rounded, rarely obtuse to retuse, coriaceous ; glabrous above and below, midrib rarely with a few short hairs, slightly prominent above ; secondary nerves 8-11 pairs, anastomosing well before the margin ; petiole 3-10 mm, semicircular in cross section, glabrous to thinly strigose.

Inflorescences 1, rarely 2 per axil, 1.5-5(-11) cm long, axes strigose, rarely glabrous. Bracts and bracteoles triangular to deltoid, 0.5-0.9 × 0.2-0.9 mm, thinly strigose on the outer surface and within towards the apex, margin ciliolate. Flowers yellowish-white, with a slight, disagreeable odour. Pedicels (2-)3 mm, strigose. Sepals broadly elliptic to broadly obovate or rounded triangular, 1.5-3 × 1.4-2 mm, outside and inside strigose, margin ciliolate. Petals elliptic to narrowly elliptic, 2.9-4.4 × 1.1-1.2 mm, outside and inside woolly. Stamens ca. 1.4 mm long, shorter than the gynoecium ; staminal tube hairy outside and inside (sometimes glabrous inside) ; anthers sterile, glabrous. Ovary hairy in apical part ; style 0.9-1.9 mm, densely hairy ; stigma glabrous.

Fruit globose, orange, short hairy at apex. Seeds elliptic, black, 9 × 7 mm, with an orange aril.

TYPE : *MacKee 24667* (holo-, P ! ; iso-, BRI !, CANB !, K !, L !, MO !, NOU !, NSW !, P !).

A species of dense, humid forests, from low to middle elevation (200-500 m), and indifferent to substrate. It can be found on ultrabasic rocks, particularly in the south of the Grande Terre, where it is very abundant, reaching 10 individuals per hectare (J.-M. VEILLON, pers. comm.), and where it attains its maximum size. The species also occurs on schists where it extends to the north as far as the upper Tiwaka. It flowers from June to December and fruits from November to July. Flowers and fruits are sometimes present simultaneously on the same plant (*MacKee 32302, 33314*).

This new genus has puzzled botanists in New Caledonia for many years. H. S. MACKEE (who first discovered it in 1972) as well as J.-M. VEILLON and the first author were well aware that it was a new genus, but were not sure about the family. One of the problems of placing the genus was the lack of male flowers, all specimens collected being of female plants.

Several families had been suggested, including *Symplocaceae*. Thus some specimens were sent accidentally to H. P. NOOTEBOOM (L) who was engaged in a revision of the family for the Flore de la Nouvelle-Calédonie et Dépendances. He did not recognize the plants either and passed them on to M. M. J. VAN BALGOOY, who noted a resemblance with *Xanthophyllum* (leaves and glands) and *Eriandra* (flowers) both in the *Polygalaceae*. He showed the specimens to the second author, who had revised the family for Flora Malesiana and who confirmed VAN BALGOOY's suggestion.

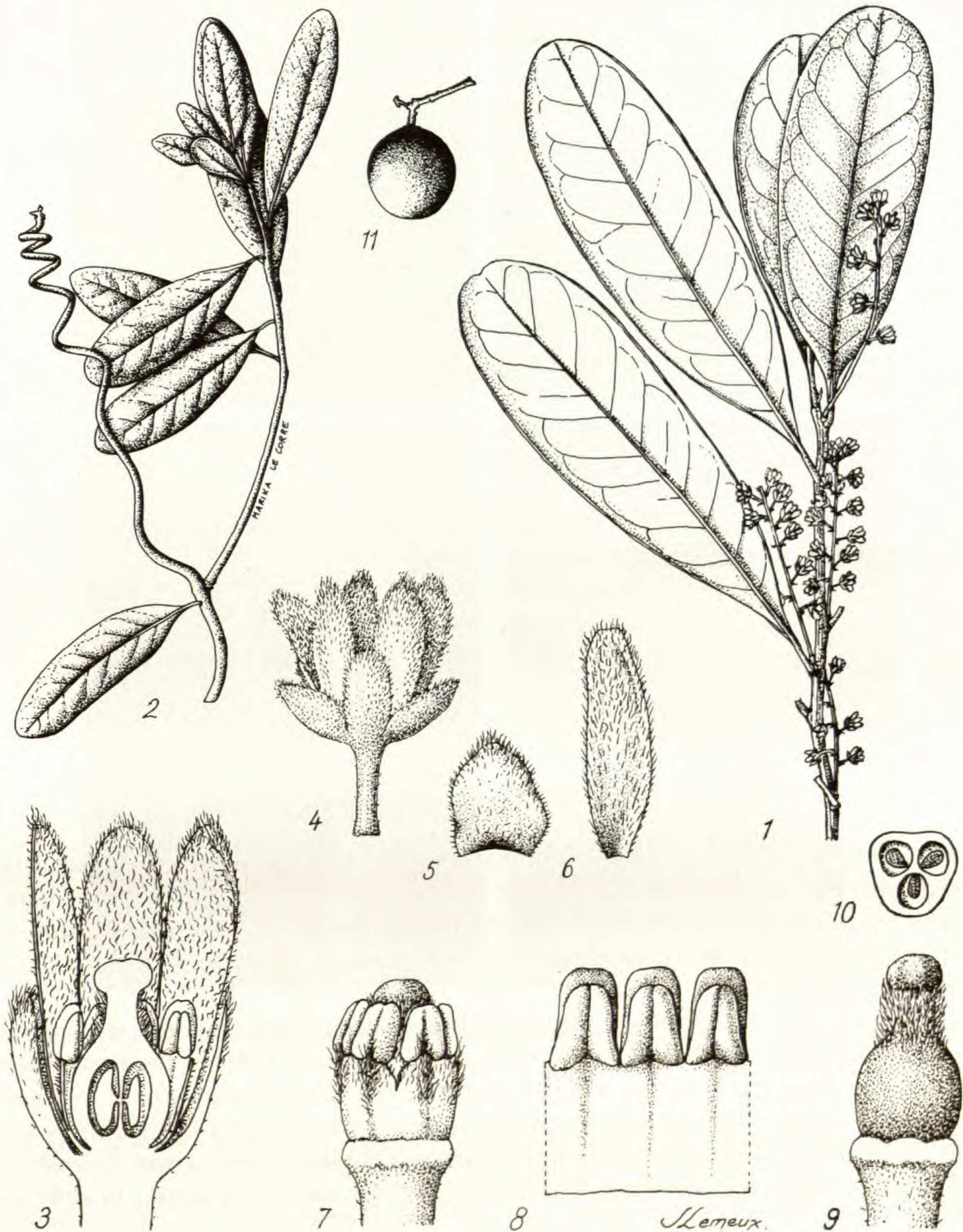


Fig. 1. — *Balgoya pacifica* Morat & Meijden : 1, flowering branch $\times 2/3$; 2, branch with twisted flowering axis $\times 1/4$; 3, flower in longitudinal section $\times 12$; 4, enlarged complete flower $\times 6$; 5, sepal (internal view) $\times 8$; 6, petal (internal view) $\times 8$; 7, staminal tube, dorsally slit $\times 12$; 8, staminal tube (internal view) $\times 20$; 9, ovary $\times 12$; 10, ovary, transverse section $\times 12$; 11, fruit $\times 1$. (1, 3-10, *MacKee* 24667; 2, 11, *Veillon* 3167).

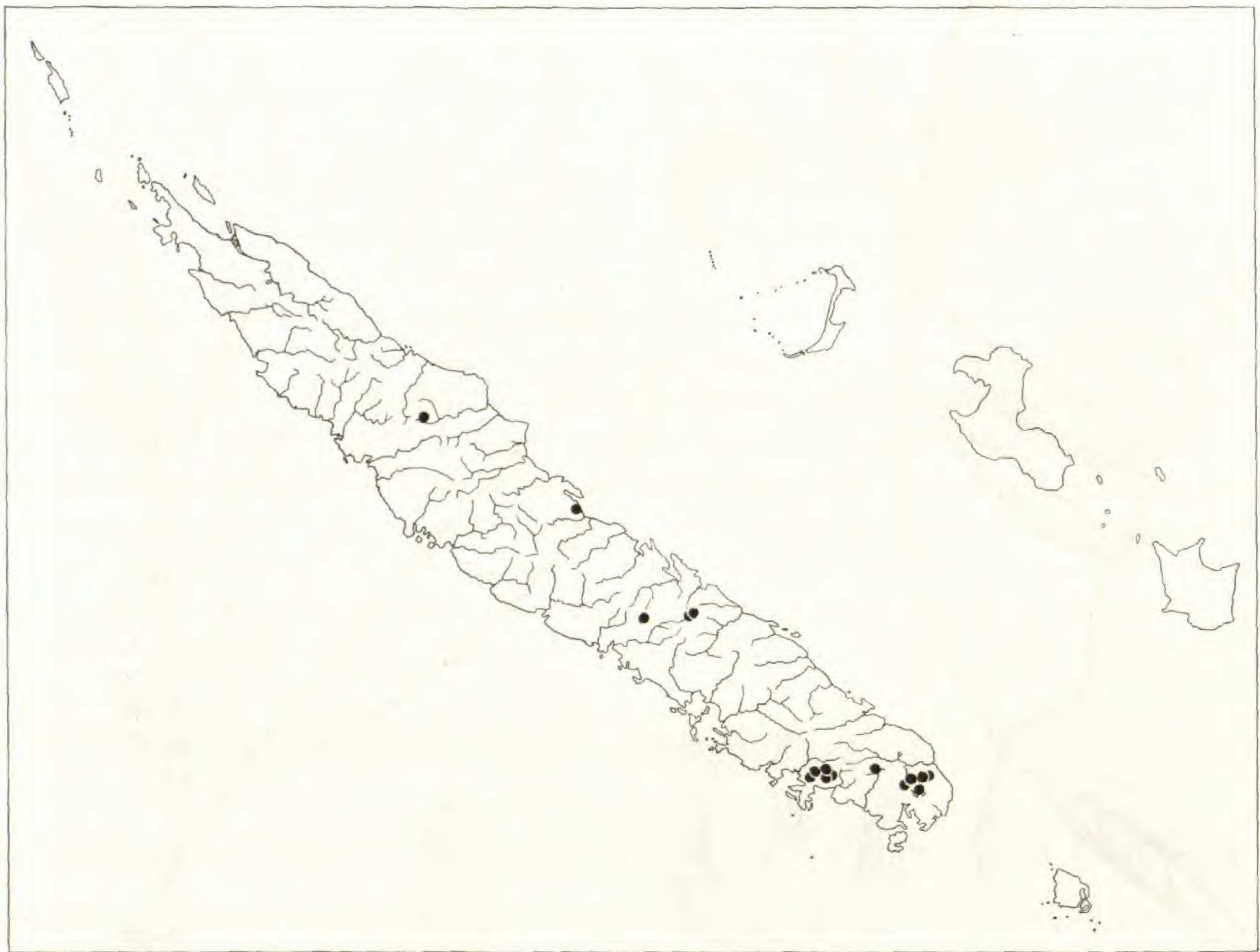


Fig. 2. — Distribution of *Balgoya pacifica* Morat & Meijden.

NOTES : The anthers are probably tetrasporangiate, with the inner cells shorter than the outer ones, opening by a semicircular slit over both locules. No open anthers have been found so far, and no pollen grains have been observed. This has led us to the conclusion that the specimens examined all come from female flowering plants. Presumably the species is thus either dioecious or apomictic.

The evidence from morphology, wood and leaf anatomy, and fruit and seed morphology and anatomy (see BAAS, 1991, DÉTIENNE, 1991, and VERKERKE, 1991, in the following articles of this same fascicle) clearly places this new genus in the tribe *Moutabeeae* of *Polygalaceae*.

The nearly regular floral symmetry, which is a derived character in the family (VAN DER MEIJDEN, 1988), allies *Balgoya* with the New Guinean-Solomon islands genus *Eriandra* and the South American genus *Diclidanthera*. The three genera are also quite similar in style and fruit structure.

Balgoya differs from the other two genera in the free sepals and petals, the 3-locular ovary (in *Eriandra* 7-8-locular, in *Diclidanthera* 5-locular), and the number of stamens : 6-8 in *Balgoya*, 8-10 or 10 in the other two. From *Eriandra* the new genus differs furthermore in being a liana rather than a tree, and in the glabrous rather than hairy anthers.

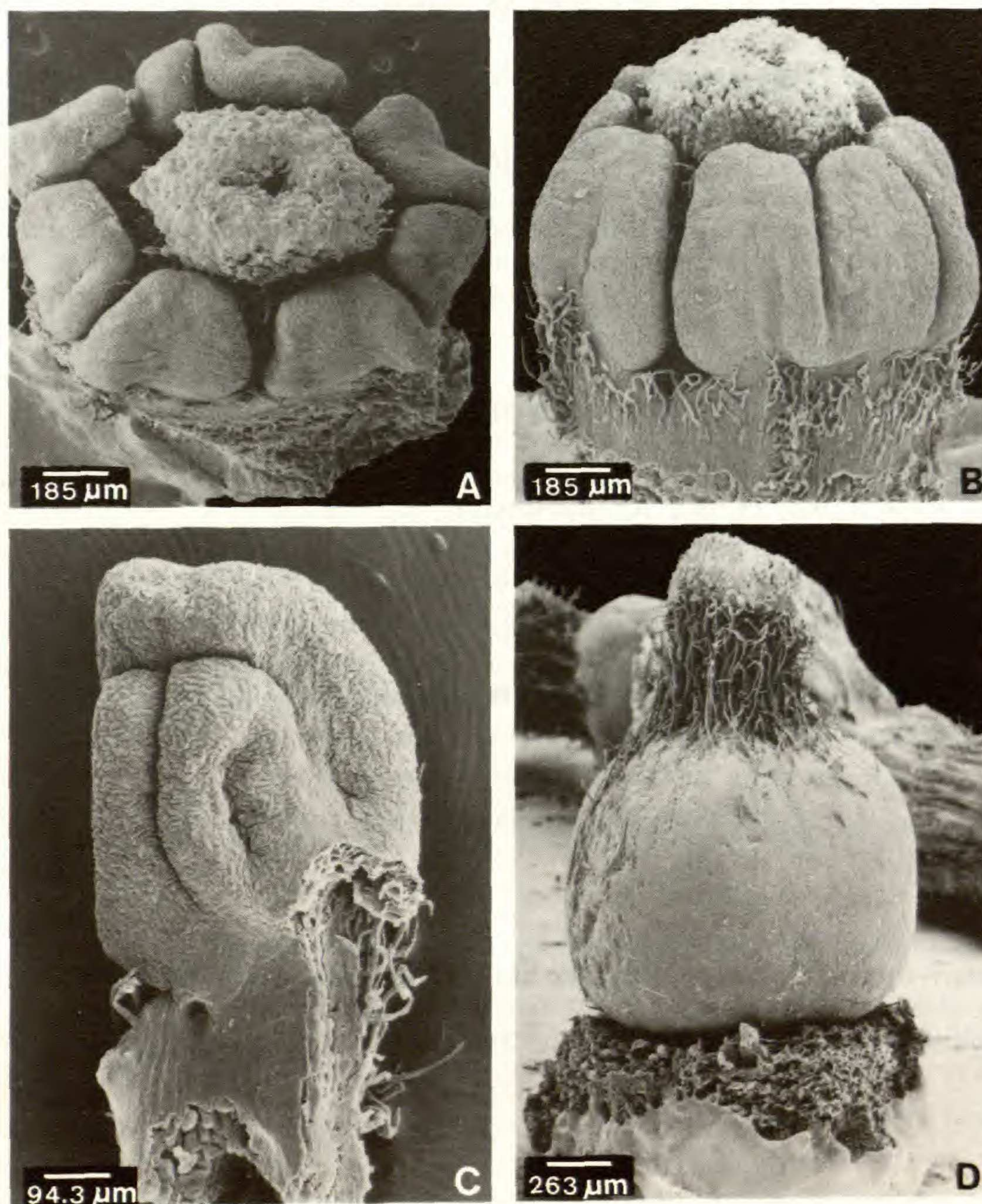


Fig. 3. — *Balgoya pacifica* Morat & Meijden, SEM : A, stamens and stigma seen from above ; B, *idem*, seen from aside ; C, stamen, ventral side ; D, ovary.

MATERIAL STUDIED : *Brinon 1036*, Thy, 380 m, 7.12.1980, fl. (NOU) ; *Hartley 14900*, Nakada, 500 m, 13.11.1979, fl. (CANB, NOU) ; *MacKee 24667* (type), Col d'Amieu, 350 m, 11.11.1971, fl., fr. (CANB, K, L, MO, NOU, P) ; *24963*, Col d'Amieu, 350 m, 28.1.1972, fl., fr. (L, NOU, P) ; *31102*, Aoupinié, 600 m, 22.4.1976, stér. (NOU, P) ; *32211*, Mois de Mai, Hte. Yaté, 200 m, 10.11.1976, fl., fr. (L, NOU, P) ; *32302*, Rivière Bleue : Hte. Yaté, 200 m, 22.11.1976, fl., fr. (L, NOU, P) ; *32617*, Mois de Mai, 200 m, 9.1.1977, fl., fr. (L, NOU, P) ; *33314*, Rivière Bleue, 200 m, 16.6.1977, fl., fr. (L, NOU, P) ; *37069*, Poindimié, 350 m, 3.7.1979, stér. (NOU, P) ; *37589*, Rivière Blanche, Hte. Yaté, 200 m, 16.6.1977, stér. (NOU, P) ; *37895*, Koghi, 500 m, 16.3.1980, stér. (NOU, P) ; *41078*, Rivière des Pirogues, 250 m, 10.12.1982, stér. (NOU, P) ; *42367*, Koghi, 500 m, stér., échantillon de bois ; *42368*, *ibid.*, stér. (L, NOU, P) ; *McPherson 1745*, Thy,

450 m, 10.7.1979, fr. (MO, NOU, P); 3374, *ibid.*, 400 m, 22.11.1980, fl. (MO, NOU, P); 3394, *ibid.*, 7.12.1980, fl. (MO, NOU, P); *Veillon 1745*, Thy, 450 m, fr. (NOU); 3167, Mois de Mai, 200 m, fr. (NOU, P); 4644, Tango, Hte. Tiwaka, 500 m, 21.10.1981, fl. (NOU).

ACKNOWLEDGEMENTS : The authors are greatly indebted to : M. M. J. VAN BALGOOY (L) who recognized the polygalaceous nature of these plants. The genus is named after him ; the specific epithet refers to the area of VAN BALGOOY's biogeographical studies, as well as to the distribution of the species. F. A. C. B. ADEMA (L) is acknowledged for his observations, which added to our description, and J. F. VELDKAMP (L) for the translation of the Latin diagnosis. We also thank H. S. MACKEE, T. JAFFRÉ and J.-M. VEILLON of the Centre ORSTOM, Nouméa, who, with the first author, searched in the field during more than 15 years for the apparently non-existent male individuals, and M. CHALOPIN who verified the material.

REFERENCES

- BAAS, P., 1991. — Leaf anatomy of *Balgoya pacifica* (*Polygalaceae*) from New Caledonia. *Bull. Mus. natl. Hist. nat.*, Paris, 4^e sér., 13, sect. B, *Adansonia*, n^{os} 1-2 : 13-15.
- DÉTIENNE, P., 1991. — Anatomie du bois de *Balgoya pacifica* (*Polygalaceae*) de Nouvelle-Calédonie. *Bull. Mus. natl. Hist. nat.*, Paris, 4^e sér., 13, sect. B, *Adansonia*, n^{os} 1-2 : 17-20.
- MEIJDEN, R. VAN DER, 1988. — *Polygalaceae*, in *Flora Malesiana I*, 10 (3) : 455-539.
- VERKERKE, W., 1991. — Fruits and Seeds of *Balgoya pacifica* (*Polygalaceae*) from New Caledonia. *Bull. Mus. natl. Hist. nat.*, Paris, 4^e sér., 13, sect. B, *Adansonia*, n^{os} 1-2 : 9-12.